

Atty's 21919

Pat. App. 09/919,338

CLAIM AMENDMENTS

claim 1, (cancelled)
claim 2, (cancelled)
claim 3, (cancelled)
claim 4, (cancelled)
claim 5, (cancelled)
claim 6, (cancelled)
claim 7, (cancelled)
claim 8, (cancelled)
claim 9, (cancelled)

1 10. (currently amended) An apparatus for measuring a
2 temperature in an electrical apparatus, comprising:
3 a first glass fiber impressed with a first Bragg grating
4 having a specific first Bragg reflection wavelength λ_{B01} and
5 positioned at a location in an electrical apparatus at which a
6 temperature is to be measured, whereby the Bragg reflection
7 wavelength λ_{B01} of said first Bragg grating is shifted as a function
8 of change in said temperature at said location;
9 a source of broad-band light coupled to said first glass
10 fiber for launching said broad-band light into said first glass
11 fiber;
12 a second glass fiber impressed with a second Bragg
13 grating having a specific second Bragg reflection wavelength λ_{B02}
14 different from the specific Bragg reflection wavelength λ_{B01} of the
15 first Bragg grating;

Atty's 21919

Pat. App. 09/919,338

16 an optocoupler for coupling said first glass fiber with
17 said second glass fiber so that reflected light from the first
18 Bragg grating is conducted to said second Bragg grating; and
19 a photodetector coupled to said second glass fiber
20 downstream of said second Bragg grating and receiving nonreflected
21 light from said second Bragg grating, said photodetector having an
22 output voltage dependent upon detected light intensity and
23 representing a measurement of said temperature at said location,
24 a plurality of said first Bragg gratings being written
25 into said first glass fiber in spaced-apart relationship and
26 positioned at a corresponding number of locations of said
27 electrical apparatus at which temperatures are to be measured, said
28 second Bragg grating having a variable second Bragg reflection
29 wavelength λ_{B02} , said photodetector comprising a photodiode and a
30 transimpedance amplifier connected to said photodiode, said
31 apparatus, further comprising means for mechanically deforming
32 said second glass fiber in a micrometer range to vary said specific
33 second Bragg reflection wavelength λ_{B02} of said second glass fiber,
34 said optocoupler having a branch to which a further glass fiber is
35 coupled, said apparatus further comprising means for converting a
36 light signal in said further glass fiber to a voltage, an output
37 signal of said photodetector being normalized to the voltage into
38 which the light signal in said further glass fiber is converted ~~the~~
39 ~~apparatus defined in claim 5 wherein~~ said photodetector comprises
40 comprising a photodiode and a transimpedance amplifier connected to
41 said photodiode, said apparatus further comprising means for

Atty's 21919

Pat. App. 09/919,338

42 mechanically deforming said second glass fiber in a micrometer
43 range to vary said specific second Bragg reflection wavelength λ_{B02}
44 of said second glass fiber, said optocoupler having a branch to
45 which a further glass fiber is coupled, said apparatus further
46 comprising means for converting a light signal in said further
47 glass fiber to a voltage, an output signal of said photodetector
48 being normalized to the voltage into which the light signal in said
49 further glass fiber is converted.

Claim 11, (cancelled)

Claim 12, (cancelled)

1 13. (currently amended) An apparatus for measuring a
2 temperature in an electrical apparatus, comprising:
3 a first glass fiber impressed with a first Bragg grating
4 having a specific first Bragg reflection wavelength λ_{B01} and
5 positioned at a location in an electrical apparatus at which a
6 temperature is to be measured, whereby the Bragg reflection
7 wavelength λ_{B01} of said first Bragg grating is shifted as a function
8 of change in said temperature at said location;
9 a source of broad-band light coupled to said first glass
10 fiber for launching said broad-band light into said first glass
11 fiber;
12 a second glass fiber impressed with a second Bragg
13 grating having a specific second Bragg reflection wavelength λ_{B02}

Atty's 21919

Pat. App. 09/919,338

14 different from the specific Bragg reflection wavelength λ_{BG1} of the
15 first Bragg grating;

16 an optocoupler for coupling said first glass fiber with
17 said second glass fiber so that reflected light from the first
18 Bragg grating is conducted to said second Bragg grating; and
19 a photodetector coupled to said second glass fiber
20 downstream of said second Bragg grating and receiving nonreflected
21 light from said second Bragg grating, said photodetector having an
22 output voltage dependent upon detected light intensity and
23 representing a measurement of said temperature at said location,

24 a plurality of said first Bragg gratings being written
25 into said first glass fiber in spaced-apart relationship and
26 positioned at a corresponding number of locations of said
27 electrical apparatus at which temperatures are to be measured, said
28 second Bragg grating having a variable second Bragg reflection
29 wavelength λ_{BG2} , said photodetector comprising a photodiode and a
30 transimpedance amplifier connected to said photodiode, said
31 apparatus, further comprising means for mechanically deforming
32 said second glass fiber in a micrometer range to vary said specific
33 second Bragg reflection wavelength λ_{BG2} of said second glass fiber,
34 said optocoupler having a branch to which a further glass fiber is
35 coupled, said apparatus further comprising means for converting a
36 light signal in said further glass fiber to a voltage, an output
37 signal of said photodetector being normalized to the voltage into
38 which the light signal in said further glass fiber is converted
39 the apparatus defined in claim 5, said apparatus further comprising

Atty's 21919

Pat. App. 09/919,338

40 means for mechanically deforming said second glass fiber in a
41 micrometer range to vary said specific second Bragg reflection
42 wavelength λ_{BG2} of said second glass fiber, wherein said optocoupler
43 having a branch to which a further glass fiber is coupled, said
44 apparatus further comprising means for converting a light signal in
45 said further glass fiber to a voltage, an output signal of said
46 photodetector being normalized to the voltage into which the light
47 signal in said further glass fiber is converted.

Claim 14, cancelled.

1 15. (currently amended) An apparatus for measuring a
2 temperature in an electrical apparatus, comprising:
3 a first glass fiber impressed with a first Bragg grating
4 having a specific first Bragg reflection wavelength λ_{BG1} and
5 positioned at a location in an electrical apparatus at which a
6 temperature is to be measured, whereby the Bragg reflection
7 wavelength λ_{BG1} of said first Bragg grating is shifted as a function
8 of change in said temperature at said location;
9 a source of broad-band light coupled to said first glass
10 fiber for launching said broad-band light into said first glass
11 fiber;
12 a second glass fiber impressed with a second Bragg
13 grating having a specific second Bragg reflection wavelength λ_{BG2}
14 different from the specific Bragg reflection wavelength λ_{BG1} of the
15 first Bragg grating;

Atty's 21919

Pat. App. 09/919,338

16 an optocoupler for coupling said first glass fiber with
17 said second glass fiber so that reflected light from the first
18 Bragg grating is conducted to said second Bragg grating; and
19 a photodetector coupled to said second glass fiber
20 downstream of said second Bragg grating and receiving nonreflected
21 light from said second Bragg grating, said photodetector having an
22 output voltage dependent upon detected light intensity and
23 representing a measurement of said temperature at said location,
24 a plurality of said first Bragg gratings being written
25 into said first glass fiber in spaced-apart relationship and
26 positioned at a corresponding number of locations of said
27 electrical apparatus at which temperatures are to be measured, said
28 second Bragg grating having a variable second Bragg reflection
29 wavelength λ_{B02} , said photodetector comprising a photodiode and a
30 transimpedance amplifier connected to said photodiode, said
31 apparatus, further comprising means for mechanically deforming
32 said second glass fiber in a micrometer range to vary said specific
33 second Bragg reflection wavelength λ_{B02} of said second glass fiber,
34 said optocoupler having a branch to which a further glass fiber is
35 coupled, said apparatus further comprising means for converting a
36 light signal in said further glass fiber to a voltage, an output
37 signal of said photodetector being normalized to the voltage into
38 which the light signal in said further glass fiber is converted,
39 ~~The apparatus defined in claim 5 wherein said optocoupler has~~
40 having a branch to which a further glass fiber is coupled, said
41 apparatus further comprising means for converting a light signal in

Atty's 21919

Pat. App. 09/919,338

42 said further glass fiber to a voltage, an output signal of said
43 photodetector being normalized to the voltage into which the light
44 signal in said further glass fiber is converted.